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Filed : February 12, 2001

REMARKS

Claims 1 and 18 have been amended and Claims 28-33 have been newly added. Support for the amendments and the new claims can be found throughout the specification such as at page 20, lines 19-22, and page 10, lines 1-24, for example. Accordingly, no new matter has been added by these amendments. Claims 5, 8, 9, 13-17, and 26 are cancelled. Accordingly, Claims 1-4, 6, 7, 10-12, and 18-25, 27-33 are presented for examination. Reconsideration of the present case is respectfully requested.

Summary of Interview

Applicants wish to thank the Examiner for the courteous telephonic interview on June 10, 2004. During the interview, Applicants' representatives and the Examiner discussed the language of the pending claims and the limitations of the art cited in the April 9, 2004 Office Action. More specifically the scope of the term "physical border" was discussed in detail. While no agreement was made at the end of the interview, relevant issues regarding the patentability of the claimed invention were clarified. Applicants will now address these issues in more detail below.

Discussion of Rejection Under 35 U.S.C. § 102

The Examiner has rejected Claims 1-4, 6-7, 10-12, 18-20, and 23-25 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,863,722 (Brenner). Applicants respectfully traverse because Brenner does not disclose each and every element of the pending claims.

To be anticipatory under 35 U.S.C. § 102, a reference must teach each and every element of the claimed invention. *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379 (Fed. Cir. 1986). "Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference. ...There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991).

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In general, Applicants methods and compositions relate to composite arrays which are made from a plurality of individual arrays. In one embodiment, a substrate has multiple assay locations, wherein the assay locations include multiple sites (e.g., wells or etchings) containing microspheres. As recited in some of the pending claims, the assay locations can be separated from each other by a partition and enclosed by a lid to form hybridization chambers. The above configuration allows for skilled artisans to quickly and easily perform multiple assays simultaneously, while minimizing cross contamination between assay locations.

More specifically, Claims 1-4, 6-7, 10-12, and 28-33 are directed to compositions for performing a first assay at a first assay location and performing a second assay at a second assay location, wherein the assay locations are separated from each other by a partition, and are enclosed by a lid to form hybridization chambers. Similarly, Claims 18-20 and 23-25 relate to methods of making compositions for performing a first assay at a first assay location and performing a second assay at a second assay location, wherein the assay locations are separated from each other by a partition, and are enclosed by a lid to form hybridization chambers.

In the Office Action, mailed April 9, 2004, the Examiner indicated that the claimed term “physical border,” under its broadest reasonable interpretation, encompassed mere spacing between microspheres. Applicants strongly disagree with the Examiner regarding this interpretation, as the specification expressly distinguishes between the terms “physical borders” and mere “spacing”. *See* page 10, lines 2-6 of the specification.

Nonetheless, solely in the interest of furthering the prosecution of the present application, the pending claims now recite that the assay locations are enclosed and separated from each other by a partition. The specification clearly describes a partition as a different type of separation from mere spacing. More specifically, the specification provides: “[t]he separation [between assay locations] can be a partition, alternatively, the separation can simply be spacing between assay locations...” *See* page 10, lines 4-5 of the specification. As stated by the Office Action, Brenner is directed to compositions wherein the assay sites are separated by spacing alone. Brenner does not disclose the use of partitions to separate assay locations.

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In addition to not disclosing partitions, Brenner also fails to teach hybridization chambers, as recited in the pending claims. In fact, as shown in Figure 5, Brenner appears to emphasize the use of open-faced arrays. Nowhere in Brenner is it suggested to enclose the arrays to form hybridization chambers. As Brenner fails to teach the claimed hybridization chambers, this reference cannot be used for anticipatory purposes.

As Brenner fails to teach each and every claim limitation, it cannot anticipate Claims 1-4, 6-7, 10-12, 18-20, and 23-25. For this reason, Applicants respectfully request the Examiner to withdraw the rejection under 35 U.S.C. §102, and allow the pending claims.

Discussion of Rejection Under 35 U.S.C. § 103

The Examiner rejected Claims 1-4, 6, 7, 10-12, 18-20, and 23-25 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Brenner in view of U.S. Patent No. 6,147,205 (McGall) and U.S. Patent No. 5,807,522 (Brown). The Examiner also rejected Claims 1-4, 6, 7, 10-12, 18-20, 23-25, and 27 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,327,410 (Walt) in view of U.S. Patent No. 6,129,896 (Noonan) and U.S. Patent No. 6,248,521 (Van Ness). In addition, the Examiner rejected Claims 21 and 22 under 35 U.S.C. §103(a) as allegedly being unpatentable over Walt in view of Noonan, Van Ness, and U.S. Patent No. 6,306,643 (Gentalen) and over Brenner in view of Gentalen.

To establish a *prima facie* case of obviousness a three-prong test must be met. First, there must be some suggestion or motivation, either in the references or in the knowledge generally available among those of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success found in the prior art. Third, the prior art must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

The above-mentioned rejections were made under both broad and narrow constructions of the term “physical border,” which was recited in the previously submitted claims. While disagreeing with the Examiner’s interpretation of the term “physical border,” in an effort to further the prosecution of the present application, the current claims now recite that the claimed assay locations are separated from one another by a partition. Written description support and non-limiting examples of partitions can be found on page 10, lines 13-24 of the specification, for

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example. Accordingly, Applicants submit that any issues regarding the scope of the term “physical border” are now moot.

With regards to the pending claims, Applicants first submit that the cited references fail to teach or suggest all of the elements of the rejected claims. Specifically, the pending claims recite compositions, and methods of making the same, comprising multiple, enclosed assay locations, separated by a partition. In contrast to Applicants’ claims, none of the cited references (Brenner, McGall, Brown, Walt, Noonan, Van Ness, or Gentalen) teach composite arrays having separately enclosed assay locations. While Van Ness does teach a solid substrate within a chamber, it is clear that this reference does not teach enclosed multiple assay locations, separated from each other by a partition, as recited in the pending claims. (*See* Figure 5 in Van Ness).

In addition to not teaching or suggesting each and every claim limitation, the cited art fails to provide the motivation or suggestion to achieve enclosed assay locations separated from each other by a partition. In contrast to the cited art, Applicants have recognized that a partition serves at least two important purposes in the claimed compositions. First, a partition is useful in preventing the cross-contamination of reagents as it minimizes sample leakage between assay locations. Second, by being enclosed with a lid, the compositions facilitate small sample size and handling. (*See* specification, page 18, lines 37-39) That is, the claimed hybridization chambers are separated by enclosing a defined space around each assay location to maintain control over small sample volumes or arrays. By enclosing the assay locations, potential sample variance and migration, caused by handling or vibration, for example, is minimized thereby rendering the data obtained from the enclosed array more reliable. (*See* specification, page 19, lines 18-21) Additionally, the enclosed assay locations allow for prolonged incubation periods (compared to open formats) and consistency within sample solutions. (*See* specification, page 19, lines 23-25) Finally, enclosed assay locations facilitate mixing of the sample, when desired. (*See* specification, page 19, line 27)

Neither Brenner, McGall, Brown, Walt, Noonan, Van Ness, nor Gentalen recognize or appreciate these benefits of making separate hybridization chambers. In fact, both of the primary references (Brenner and Walt) appear to teach away from multiple, enclosed assay locations, as they emphasize open faced substrates. More specifically, Figure 5 from Brenner is an illustration

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showing an open faced substrate, and Figures 5A and 5B from Walt both depict open faced well arrays. Nothing in the other cited references (Brown, McGall, Noonan, Van Ness or Gentalen) would lead a person with skill in the art to utilize the compositions as claimed by Applicants. As one example, Brown is directed to methods of generating spot arrays using a tipped device that appears to utilize an open faced substrate for dispensing reagents. (See Brown, Figs. 2A, 2B, and 2C).

While Van Ness discloses an enclosed substrate, this reference does not appreciate the benefits of using a partition on the substrate to prevent sample migration between the assay locations. In reviewing the substrate depicted in Figure 5 from Van Ness, a skilled artisan would recognize that sample migration could occur between the assay sites, as the substrate lacks any type of partition between the sites.

As the cited art fails to teach or suggest each of the claimed elements, and does not provide any motivation to make the claimed, enclosed assay locations separated by a partition, an obviousness rejection based on these references is improper. Thus, for all of the above reasons, Applicants respectfully request withdrawal of the rejections of Claims 1-4, 6, 7, 10-12, 18-25, and 27 under 35 U.S.C. § 103(a), and allowance of the pending application.

Discussion of Nonstatutory Double Patenting Rejection

The Examiner rejected Claims 1-4, 6-7, 10-12, 18-25, and 27 under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over Claims 1-24 of Allowed Application No. 09/931,271.

While Applicants respectfully disagree with this rejection, a signed terminal disclaimer, in compliance with 37 C.F.R. §1.321(c) is submitted herewith. As the attached terminal disclaimer generally disclaims the terminal part of any patent granted on the above-referenced application that would extend beyond the expiration date of the full statutory term of any patent issuing from U.S. Patent Application No. 09/931,271, Applicants respectfully request the withdrawal of this rejection and allowance of the pending claims.

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CONCLUSION

Applicants have endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. Accordingly, amendments to the claims, the reasons therefor, and arguments in support of the patentability of the pending claim set are presented above. Any claim amendments which are not specifically discussed in the above remarks are made in order to improve the clarity of claim language, to correct grammatical mistakes or ambiguities, and to otherwise improve the capacity of the claims to particularly and distinctly point out the invention to those of skill in the art. In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410. If the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, the Examiner is respectfully requested to initiate the same with the undersigned.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: *Marc Baumgartner*
Marc Baumgartner
Registration No. P53,976
Attorney of Record
Customer No. 20,995
(619) 235-8550